

Tetsu K. Tokunaga

Earth Sciences Division (MS 70-108B)
E.O. Lawrence Berkeley National Laboratory, 1 Cyclotron Road, Berkeley, CA 94720.
510-486-7176, tktokunaga@lbl.gov

Education:

Ph.D., 1986, Soil Science, University of California, Berkeley.
The temperature dependence of gas diffusivities in porous media.
B.A., 1979, Soil Resources, University of California, Berkeley.

Biographical Summary:

Tetsu Tokunaga is a senior staff scientist in the Earth Science Division of Lawrence Berkeley National Laboratory, studying the physicochemical basis of environmental transport processes. While conducting his graduate studies on gas diffusion in porous media at the University of California, Berkeley, he began working at LBNL on problems of unsaturated flow and transport from uranium mill tailings, and on reactive transport of selenium in contaminated wetland (Kesterson Reservoir). Upon graduation, he continued at LBNL conducting laboratory and field based studies on soil/geologic transport problems. In addition to his research at LBNL, he taught soil physics courses at the University of California, Berkeley. He currently has over 60 publications in peer-reviewed journals.

Research Interests:

Tetsu Tokunaga's research combines soil physics with related fields of hydrogeology and biogeochemistry. His research accomplishments include identifying the general free-path basis for gas diffusion in porous media, the importance of water film hydraulics in multiphase fluid flow, Boltzmann flux distributions in unsaturated rocks, limits for capillary hysteresis, the permeability-sorptivity scaling relation, the unsustainability of reduction-based remediation of uranium contamination, and the possibility of uranium recovery from contaminated groundwaters through precipitation of uranyl vanadates. He has developed methods for direct measurements of diffusion-limited precipitation of selenium, chromium and uranium in variable redox sediments; developed and validated methods to predict hydrologic and geochemical cycles in vernal pools/wetlands; and developed innovations in tensiometric water potential measurements.

Professional Experience:

1988 -1993: Scientist, Earth Sciences Division, Lawrence Berkeley National Laboratory
1990, 1992: Lecturer, Department of Soil Science, University of California, Berkeley.
1993-2001: Staff scientist, Earth Sciences Division, LBNL.
2001-present: Senior staff scientist, Earth Sciences Division, LBNL

Service:

Earth Sciences Division, Professional Staff Committee (2001-).
LBNL, Professional Staff Committee (2008-).
Vadose Zone Journal, associate editor (2008-).
Water Resources Research, associate editor (2009-).

Publications (refereed journals):

1. Tokunaga, T.K., 1985. Porous media gas diffusivities from a free path distribution model. *J. Chem. Phys.* 82:5298-5299.
2. Narasimhan, T.N., White, A.F., and T. Tokunaga, 1986. Groundwater contamination from an inactive uranium mill tailings pile. 2. Application of a dynamic mixing model. *Water Resources Res.* 22:1820-1834.
3. Tokunaga, T.K., 1988. Laboratory permeability errors from annular wall flow. *Soil Sci. Soc. Am. J.* 52:24-27.
4. Tokunaga, T.K., L.J. Waldron, and J. Nemson, 1988. A closed-tube method for measuring gas diffusion coefficients. *Soil Sci. Soc. Am. J.* 52:17-23.
5. Long, R.H.B., S.M. Benson, T.K. Tokunaga, and A. Yee. 1990. Selenium immobilization in a pond sediment at Kesterson Reservoir. *J. Environ. Qual.* 19:302-311.
6. Tokunaga, T.K., Lipton, D.S., Benson, S.M., Yee A.W., Oldfather, J.M., Duckart, E.C., Johannis, P.W., and K.E. Halvorsen, 1991. Depth distributions and time trends in profiles of selenium and soluble salts in vegetated upland soils of Kesterson Reservoir. *Water, Air, and Soil Pollution* 57/58:31-41.
7. Tokunaga, T.K., and S.M. Benson, 1992. Selenium in Kesterson Reservoir ephemeral pools: 1. A field study of ponding resulting from shallow water table rise. *J. Environ. Qual.* 21:246-251.
8. Poister, D., and T.K. Tokunaga, 1992. Selenium in Kesterson Reservoir ephemeral pools: 2. Laboratory experiments. *J. Environ. Qual.* 21:252-258.
9. Zawislanski, P.T., T.K. Tokunaga, S.M. Benson, J.O. Oldfather, and T.N. Narasimhan. 1992. Bare soil evaporation and solute movement in selenium-contaminated soils at Kesterson Reservoir, CA. *J. Environ. Qual.* 21:447-457.
10. Tokunaga, T., 1992. The pressure response of the soil water sampler, and possibilities for simultaneous soil solution sampling and tensiometry. *Soil Sci.* 154:171-183.
11. Tokunaga, T., and R. Salve. 1994. Gauge sensitivity optimization in air pocket tensiometry: Implications for deep vadose zone monitoring. *Soil Sci.* 158:389-397.
12. Tokunaga, T.K., S.R. Sutton, and S. Bajt. 1994. Mapping of selenium concentrations in soil aggregates with synchrotron x-ray fluorescence microprobe. *Soil Sci.* 158:421-433.
13. Pickering, I.J., G.E. Brown, Jr., and T.K. Tokunaga. 1995. Quantitative speciation of selenium in soils using x-ray absorption spectroscopy. *Environ. Sci. Technol.*, 29, 2456-2459.
14. Wan, J., T.K. Tokunaga, and C.F. Tsang. 1995. Bacterial sedimentation through porous media. *Water Resour. Res.* 31:1627-1636.
15. Sutton, S.R., S. Bajt, J. Delaney, D. Schulze, and T. Tokunaga. 1995. Synchrotron x-ray fluorescence microprobe: Quantification and mapping of mixed valence state samples using micro-XANES, *Rev. Sci. Instrum.*, 66, 1464-1467.
16. Tokunaga, T.K., I.J. Pickering, and G.E. Brown, Jr. 1996. Selenium transformations in ponded sediments. *Soil Sci. Soc. Am. J.* 60:781-790.
17. Wan, J., T.K. Tokunaga, C.-F. Tsang, and G.S. Bodvarsson. 1996. Improved glass micromodel methods for studies of flow and transport in fractured porous media. *Water Resour. Res.* 32, 1955-1964.
18. Tokunaga, T.K. 1997. A tensiometer for measuring hydraulic potentials on surfaces of rock. *Water Resour. Res.*, 33, 1509-1513.

19. Tokunaga, T.K., G.E. Brown, Jr., I.J. Pickering, S.R. Sutton, and S. Bajt. 1997. Selenium redox reactions and transport between ponded waters and sediments, *Environ. Sci. Technol.* 31, 1419-1425.
20. Tokunaga, T.K., and J. Wan. 1997. Water film flow along fracture surfaces of porous rock. *Water Resour. Res.*, 33, 1287-1295.
21. Wan, J., and T.K. Tokunaga. 1997. Film-straining of colloids in unsaturated porous media: Conceptual model and experimental testing. *Environ. Sci. Technol.*, 31, 2413-2420.
22. Myneni, S.C.B., T.K. Tokunaga, and G.E. Brown, Jr. 1997. Abiotic selenium redox transformations in the presence of Fe(II,III) oxides. *Science*, 278, 1106-1109.
23. Tokunaga, T.K., S.R. Sutton, S. Bajt, P. Nuessle, and G. Shea-McCarthy. 1998. Selenium diffusion and reduction at the water-sediment boundary: Micro-XANES spectroscopy of reactive transport. *Environ. Sci. Technol.*, 32, 1092-1098.
24. Wan, J., and T.K. Tokunaga. 1998. Measuring partition coefficients of colloids at air-water interfaces. *Environ. Sci. Technol.* 32, 3293-3298.
25. Wan, J., T.K. Tokunaga, T. R. Orr, J. O'Neill, and R. W. Connors. 2000. Glass casts of rock fracture surfaces: A new tool for studying flow and transport. *Water Resour. Res.*, 36, 355-360.
26. Tokunaga, T.K., J. Wan, and S.R. Sutton. 2000. Transient film flow on rough fracture surfaces. *Water Resour. Res.*, 36, 1737-1746.
27. Salve, R., J.S.Y. Wang, and T.K. Tokunaga. 2000. A probe for measuring wetting front migration in rocks, *Water Resour. Res.*, 36, 1359-1367.
28. Veerapaneni, S., J. Wan, and T.K. Tokunaga. 2000. Particle motion in film flow, *Environ. Sci. Technol.*, 34, 2465-2471.
29. Salve, R., and T.K. Tokunaga. 2000. Flow processes in a rangeland catchment in California, *J. Range Manage.* 53, 489-498.
30. Tokunaga, T.K., and J. Wan. 2001. Surface zone flow along unsaturated rock fractures. *Water Resour. Res.*, 37, 287-296.
31. Wan, J., S. Veerapaneni, F. Gadelle, and T.K. Tokunaga, 2001. Generation of stable microbubbles and their transport through porous media, *Water Resour. Res.*, 37, 1173-1182.
32. Gadelle, F., J. Wan, and T.K. Tokunaga, 2001. Removal of U(VI) from contaminated sediments by surfactants, *J. Environ. Qual.*, 30, 470-478.
33. Tokunaga, T.K., and J. Wan. 2001. Approximate boundaries between different flow regimes in fractured rocks. *Water Resour. Res.*, 37, 2103-2111.
34. Tokunaga, T.K., J. Wan, M.K. Firestone, T.C. Hazen, E. Schwartz, S.R. Sutton, M. Newville. 2001. Chromium diffusion and reduction in soil aggregates, *Environ. Sci. Technol.*, 35, 3169-3174.
35. Wan, J., and T.K. Tokunaga. 2002. Partitioning of clay colloids to gas-water interfaces, *J. Colloid Interface Sci.*, 247, 54-67.
36. Tokunaga, T.K., J. Wan, and K.R. Olson. 2002. Saturation-matric potential relations in gravel. *Water Resour. Res.*, 38(10), 1214.
37. Tokunaga, T.K., J. Wan, T.C. Hazen, E. Schwartz, M.K. Firestone, S.R. Sutton, M. Newville, K.R. Olson, A. Lanzirotti, and W. Rao. 2003. Distribution of chromium contamination and microbial activity in soil aggregates. *J. Environ. Qual.* 32, 541-549.
38. Tokunaga, T.K., J. Wan, M.K. Firestone, T.C. Hazen, K.R. Olson, D.J. Herman, S.R. Sutton, and A. Lanzirotti. 2003. In-situ reduction of Cr(VI) in heavily contaminated soils through organic carbon amendment. *J. Environ. Qual.* 32, 1641-1649.

39. Tokunaga, T.K., K.R. Olson, and J. Wan. 2003. Moisture characteristics of Hanford gravels: Bulk, grain-surface, and intragranular components. *Vadose Zone J.* 2, 322-329.
40. Zheng, Z., T.K. Tokunaga, and J. Wan. 2003. Influence of calcium carbonate on U(VI) sorption to soils. *Environ. Sci. Technol.* 37, 5603-5608.
41. Wan, J., T.K. Tokunaga, J.T. Larsen, and R.J. Serne, 2004. Geochemical evolution of highly alkaline and saline tank waste plumes during seepage through vadose zone sediments. *Geochim. Cosmochim. Acta.* 68, 491-502.
42. Wan, J., J.T. Larsen, T.K. Tokunaga, Z. Zheng, 2004. pH neutralization and zonation in alkaline-saline tank waste plumes. *Environ. Sci. Technol.* 38, 1321-1329.
43. Tokunaga, T.K., J. Wan, J. Pena, S.R. Sutton, and M. Newville. 2004. Hexavalent uranium diffusion in soils from concentrated acidic and alkaline solutions. *Environ. Sci. Technol.* 38, 3056-3062.
44. Tokunaga, T.K., K.R. Olson, and J. Wan. 2004. Conditions necessary for capillary hysteresis in porous media: Tests of grain-size and surface tension influences. *Water Resour. Res.* 40, W05111.
45. Wan, J., T.K. Tokunaga, E. Saiz, J.T. Larsen, Z. Zheng, R.A. Couture. 2004. Colloid formation at waste plume fronts. *Environ. Sci. Technol.* 38, 5603-5608.
46. Tokunaga, T.K., K.R. Olson, and J. Wan. 2005. Infiltration flux distributions in unsaturated rock deposits and their potential implications for fractured rock formations. *Geophys. Res. Lett.* 32, L05405, doi:10.1029/2004GL022203.
47. Wan, J., T.K. Tokunaga, E. Brodie, Z. Wang, Z. Zheng, D. Herman, T.C. Hazen, M.K. Firestone, and S.R. Sutton. 2005. Reoxidation of bioreduced uranium under reducing conditions. *Environ. Sci. Technol.* 39, 6162-6169.
48. Tokunaga, T.K., J. Wan, J. Pena, E. Brodie, M. Firestone, T.C. Hazen, S.R. Sutton, A. Lanzirotti, and M. Newville. 2005. Uranium reduction in sediments under diffusion-limited transport of organic carbon. *Environ. Sci. Technol.* 39, 7077-7083.
49. Wan, J., and T.K. Tokunaga. 2005. Comment on “Pore-scale visualization of colloid transport and retention in partly saturated porous media”. *Vadose Zone J.* 4, 954-956.
50. Zheng, Z., J. Wan, X. Song, and T.K. Tokunaga. 2006. Sodium meta-autunite colloids: Synthesis, characterization, and stability. *Colloids Surfaces A. Physicochemical Eng. Aspects*, 274, 48-55.
51. Brodie, E.L., T.Z. DeSantis, D.C. Joyner, S.M. Baek, J.T. Larsen, G.L. Andersen, T.C. Hazen, P.M. Richardson, D.J. Herman, T.K. Tokunaga, J.M. Wan, and M.K. Firestone. 2006. Application of a high-density oligonucleotide microarray approach to study bacterial population dynamics during uranium reduction and reoxidation. *Appl. Environ. Microbiol.* 72, 6288-6298.
52. Tokunaga, T.K., J. Wan, A. Lanzirotti, S.R. Sutton, M. Newville , and W. Rao. 2007. Long-term stability of organic carbon-stimulated chromate reduction in contaminated soils, and its relation to manganese redox status. *Environ. Sci. Technol.* 41, 4326-4331.
53. Wan, J. T. Tyliszczak, and T.K. Tokunaga. 2007. Organic carbon distribution, speciation, and elemental correlations within soil microaggregates: Applications of STX and NEXAFS spectroscopy. *Geochim. Cosmochim. Acta* 71, 5439-5449.
54. He, Y.T., J. Wan, and T. Tokunaga. 2008. Kinetic stability of hematite nanoparticles: the effect of particle size. *J. Nanoparticle Res.*, 10, 321-332.

55. Wan, J., T.K. Tokunaga, Y. Kim, Z. Wang, A. Lanzirotti, E. Saiz, R.J. Serne. 2008. Effect of saline waste solution infiltration rates on uranium retention and spatial distribution in Hanford sediments. *Environ. Sci. Technol.* 42, 1973-1978.
56. Tokunaga, T.K., J. Wan, Y. Kim, S.R. Sutton, M. Newville, A. Lanzirotti, W. Rao. 2008. Real-time X-ray absorption spectroscopy of uranium, iron, and manganese in contaminated sediments during bioreduction. *Environ. Sci. Technol.* 42, 2893-2844.
57. Tokunaga, T.K., Wan, J., Kim, Y., R.A. Daly, E.L. Brodie, T.C. Hazen, D. Herman, and M.K. Firestone. 2008. Influences of organic carbon supply rate on uranium reduction in initially oxidizing, contaminated sediment. *Environ. Sci. Technol.* 42, 8901-8907.
58. Wan, J., T.K. Tokunaga, Y. Kim, Z. Wang, A. Lanzirotti, E. Saiz, and R.J. Serne. 2008. Effect of saline waste solution infiltration rates on uranium retention and spatial distribution in Hanford sediments. *Environ. Sci. Technol.* 42, 1973-1978.
59. Wan, J., T.K. Tokunaga, Y. Kim, E. Brodie, R. Daly, T.C. Hazen, and M.K. Firestone. 2008. Effects of organic carbon supply rates on uranium mobility in a previously bioreduced contaminated sediment. *Environ. Sci. Technol.* 42, 7573-7579.
60. Faybishenko, B. et al. (21 co-authors). 2008. In situ long-term reductive bioimmobilization of Cr(VI) in groundwater using hydrogen release compound. *Environ. Sci. Technol.* 42, 8478-8485.
61. Wan, J., Y. Kim, T.K. Tokunaga, Z. Wang, S. Dixit, C.I. Steefel, E. Saiz, M. Kunz, and N. Tamura. 2009. Spatially resolved U(VI) partitioning and speciation: Implications for plume scale behavior of contaminant U in the Hanford vadose zone. *Environ. Sci. Technol.* 3, 2247-2253.
62. Tokunaga, T.K. 2009. Hydraulic properties of adsorbed water films in unsaturated porous media. *Water Resour. Res.* 45, W06415, doi:10.1029/2009WR007734.
63. Tokunaga, T.K., Y. Kim, and J. Wan. 2009. Potential remediation approach for uranium-contaminated groundwaters through potassium uranyl vanadate precipitation. *Environ. Sci. Technol.* 43, 5467-5471.

Book chapters

- Tokunaga, T.K., P.T. Zawislanski, P.W. Johannis, D. Lipton, and S.M. Benson. 1994. Field investigations of selenium speciation, transformation, and transport in some Kesterson Reservoir and Lahontan Valley soils. *in Selenium in the Environment*, W.T. Frankenberger, Jr., and S.M. Benson, eds. Marcel Dekker, Inc.
- H.M. Ohlendorf, E.R. Byron, G.M. Santolo, S.M. Benson, P.T. Zawislanski, T.K. Tokunaga, and M. Delamore. 2002. Ecological Risk Assessment Example: Waterfowl and Shorebirds Feeding in Ephemeral Pools at Kesterson Reservoir, California. *Handbook of Ecotoxicology*, Second Edition, David J. Hoffman, Barnett A. Rattner, G. Allen Burton, Jr., John Cairns, Jr. Editors. CRC, Lewis Publishers.
- Tokunaga, T.K. 2004. Tensiometry. *in Encyclopedia of Soils in the Environment*, D. Hillel, Ed., Elsevier.

Conferences, proceedings, and invited talks (past 10 years)

Tokunaga, T.K., and J. Wan. Flow and transport in water films. Geosciences Research Program, 6th Topical Research Symp., Interfacial Processes in Geosciences, U.S. Dept. of Energy, Office of Basic Energy Sciences, Richland, WA, Feb. 1-2, 1999.

Tokunaga, T.K., and J. Wan. Fast flow in unsaturated rock fractures. Int. Symp. In Honor of Paul A. Witherspoon, Dynamics of Fluids in Fractured Rocks: Concepts and Recent Advances. Lawrence Berkeley National Laboratory, Berkeley, CA. Feb. 10-12, 1999.

Tokunaga, T.K., Fast flow in unsaturated coarse sediments, U.S. Dept. of Energy, EMSP Awards Workshop, Richland, WA, Nov. 16-18, 1999.

Tokunaga, T. K., and J. Wan. Surface zone flow along unsaturated rock fractures, Am. Geophys. Union, Fall Meeting, San Francisco, CA Dec. 1999.

Wan, J., T. K. Tokunaga, D. Joyner, T. C. Hazen, M. Firestone, E. Schwartz, S. Sutton, and M. Newville, Mesoscale Biotransformation Dynamics Controlling Reactive Transport of Chromium, NABIR PI Workshop, Reston, Virginia, Jan. 31, 2000.

Tokunaga, T.K., Fast flow in unsaturated coarse sediments, U.S. Dept. of Energy, EMSP Workshop, Atlanta, GA, Apr. 24-27, 2000.

Tokunaga, T. K., J. Wan, D. Joyner, T. C. Hazen, E. Schwartz, M. K. Firestone, S. R. Sutton, and M. Newville. Diffusion-limited biotransformation of metal contaminants in soils/sediments: Chromium. Advanced Photon Source User Activity Report, 2000. Argonne National Laboratory.

Tokunaga, T. K., J. Wan, and K. Olson, Fast film flow in unsaturated gravels, Am. Geophys. Union, Fall Meeting, San Francisco, CA Dec. 2000.

Wan, J., T. K. Tokunaga, D. Joyner, T. C. Hazen, M. Firestone, E. Schwartz, S. Sutton, and M. Newville, Mesoscale Biotransformation Dynamics Controlling Reactive Transport of Chromium, NABIR PI Workshop, Warrenton, Virginia, March 12, 2001.

Tokunaga, T. K., J. Wan, T. C. Hazen, E. Schwartz, M. Firestone, S. Sutton, M. Newville, K. Olson, A. Lanzirotti, and W. Rao. Diffusion-limited chromium reduction in soil aggregates. 222nd Am. Chem. Soc. National Meeting, Chicago, Aug. 26-30, 2001.

Tokunaga, T. K., Chromium-contaminated soils: Cr redox zonation in soil aggregates. Invited seminar, Dept. of Chemistry and Biochemistry, San Francisco State University, Oct. 19, 2001.

Tokunaga, T. K., J. Wan, T. C. Hazen, M. K. Firestone, E. Schwartz, S. R. Sutton, M. Newville, K. R. Olson, A. Lanzirotti, W. Rao, Intra-aggregate biogeochemical dynamics of chromium contamination and in-situ remediation. Am. Geophys. Union, Fall Meeting, San Francisco, CA Dec. 14, 2001.

Tokunaga, T. K. Chromium biogeochemistry in contaminated sediments: Linking laboratory batch scale and field-scale understanding. Invited seminar, Geological and Environmental Sciences, Stanford University, Jan. 29, 2002.

Tokunaga, T. K., J. Wan, T. C. Hazen, E. Schwartz, M. Firestone, D. Herman, S. Sutton, M. Newville, K. Olson, A. Lanzirotti, and W. Rao. Chromium biogeochemistry in contaminated sediments: Linking laboratory batch scale and field-scale understanding. U.S. Dept. of Energy, Natural and Accelerated Bioremediation Research Program Meeting, Warrenton, VA, March 18, 2002.

Tokunaga, T. K., J. Wan, K. R. Olson. Unsaturated hydraulic properties of gravels. Environmental Remediation Technology Department, Lawrence Berkeley National Laboratory, Sept. 23, 2002.

Tokunaga, T. K. Chromium biogeochemistry in contaminated sediments: Linking laboratory batch scale and field-scale understanding. Soil Microbiology seminar, Ecosystem Sciences, Department of Environmental Science, Policy and Management, University of California, Berkeley, Oct. 31, 2002.

Tokunaga, T. K., J. Wan, T. C. Hazen, E. Schwartz, M. Firestone, D. Herman, S. Sutton, M. Newville, K. Olson, A. Lanzirotti, and W. Rao. Chromium redox transformations in diffusion-limited domains: Linking micro- and macroscale processes. Soil Science Society America Annual Meeting, Indianapolis, IN, Nov. 11, 2002.

Tokunaga, T.K., K.R. Olson, and J. Wan, Predicted disappearance of saturation hysteresis in coarse granular media based on capillary and gravity scaling, and experimental tests, Am. Geophys. Union, Fall Meeting, San Francisco, CA, Dec. 8, 2002.

Tokunaga, T.K., K.R. Olson, and J. Wan. Comparing unsaturated hydraulics of fractured rocks and gravels. 2nd Int. Symp. on Dynamics of Fluid in Fractured rocks, Berkeley, CA Feb. 10-12, 2004.

Tokunaga, T. K., J. Wan, J. Pena, S. Sutton, and M. Newville. Uranium diffusion in soils. Remediation of Chlorinated and Recalcitrant Compounds, The 4th International Conference, Monterey, CA, May 24-27, 2004.

Tokunaga, T.K., J. Wan, J. Pena, E. Brodie, M.K. Firestone, T.C. Hazen, S.R. Sutton, A. Lanzirotti, M. Newville. Uranium bioreduction dynamics in low permeability sediments. 10th International Symposium on Microbial Ecology, Cancun, Mexico, August 22-27, 2004.

Tokunaga, T.K. Infiltration flow path distributions in unsaturated rocks. Geosciences Research Program, Basic Energy Sciences, Symposium on Flow and Transport. Gaithersburg, MD, Sept. 24-25, 2004.

Tokunaga, T.K. K.R. Olson, and J. Wan. Infiltration flow path distributions in unsaturated rocks. Modeling Forum, Earth Sciences Division, Lawrence Berkeley National Laboratory, Oct. 6, 2004.

Tokunaga, T.K., K.R. Olson, and J. Wan. Infiltration flow path distributions in unsaturated rocks. Am. Geophys. Union, Fall Meeting, San Francisco, Dec. 14, 2004.

Tokunaga, T.K., J. Wan, T.C. Hazen, M.K. Firestone, E. Brodie, Z. Zheng, J. Larsen, D. Herman,. Reoxidation of bioreduced uranium under reducing conditions. NABIR PI Workshop, Warrenton, VA, April 18, 2005.

Tokunaga, T.K., Y. Kim, J. Wan, R. Daly, E. Brodie, M.K. Firestone, T.C. Hazen. Long-term stability of biogeochemically reduced U and Cr in contaminated sediments. DOE-ERSP PI Meeting: invited talk, April 19, 2007. Warrenton, VA.

Tokunaga, T. K., J. Wan, Y. Kim, S. Sutton, A. Lanzirotti, M. Newville, and W. Rao. Long-term stability of chromate reduction in soil using organic carbon. Remediation of Chlorinated and Recalcitrant Compounds, The 6th International Conference, Monterey, CA, May 19-22, 2008.

Tokunaga, T.K. Hydraulic properties of adsorbed water films. Geosciences Research Program, DOE-BES Research Symposium on Experimental and Theoretical Geochemistry. Annapolis, MD, March 12-13, 2009.

Tokunaga, T.K., Y. Kim, and J. Wan. Searching for sustainable approaches to remediate U-contaminated environments. DOE-ERSP PI Meeting: April 22, 2009. Lansdowne, VA.